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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,319	11/25/2003	Anthony John Dean	130759-1	9460

6147 7590 08/11/2005

GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH
PATENT DOCKET RM. BLDG. K1-4A59
NISKAYUNA, NY 12309

EXAMINER	
KIM, TAE JUN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/723,319	DEAN ET AL.	
	Examiner	Art Unit	
	Ted Kim	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-45* is/are pending in the application.

4a) Of the above claim(s) *12-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/25/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Claims 12-45 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 07/25/2005.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 6-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Bussing (6,062,018). Bussing teaches a power system comprising (see e.g. Fig. 10): a fuel preconditioner 472 (predetonator, see col. 12, lines 55+) adapted to convert a fuel to at least one conditioned fuel; a pulse detonation combustor 104 adapted to receive the conditioned fuel and a primary oxidizer and to detonate a mixture comprising the conditioned fuel and the primary oxidizer and exhaust a plurality of detonation products; and a turbine positioned downstream from said pulse detonation combustor, said turbine being in flow communication with said pulse detonation combustor; a compressor 2 (Fig.

1) configured to supply air to at least one of said fuel preconditioner 472, said pulse detonation combustor 100, and said turbine 4; the fuel comprises a hydrocarbon fuel; the fuel is selected from the group consisting of natural gas and distillate liquids fuels (see e.g. col. 1, lines 25+; col. 8, lines 12+); said pulse detonation combustor is further adapted to receive a primary fuel from 470 and to detonate a mixture comprising the conditioned fuel, the primary fuel and the primary oxidizer and exhaust a plurality of detonation products; the primary fuel comprises a hydrocarbon fuel.

4. Claims 1, 6-11 are rejected under 35 U.S.C. 102(e) as being anticipated by Schick et al (2005/0019620). Shick et al teach a power system comprising: a fuel preconditioner 60 adapted to convert a fuel to at least one conditioned fuel; a pulse detonation combustor 10 adapted to receive the conditioned fuel and a primary oxidizer and to detonate a mixture comprising the conditioned fuel and the primary oxidizer and exhaust a plurality of detonation products; and a turbine 30 positioned downstream from said pulse detonation combustor, said turbine being in flow communication with said pulse detonation combustor; a compressor 40 configured to supply air to at least one of said fuel preconditioner, said pulse detonation combustor, and said turbine; the fuel comprises a hydrocarbon fuel; the fuel is selected from the group consisting of natural gas and distillate liquids fuels; wherein said pulse detonation combustor is further adapted to receive a primary fuel and to detonate a mixture comprising the conditioned fuel, the primary fuel and the primary oxidizer and exhaust a plurality of detonation products; the primary fuel comprises a hydrocarbon fuel; the primary fuel comprises a hydrocarbon

fuel; the primary fuel is selected from the group consisting of natural gas and distillate liquids fuels (see page 2, paragraph 0021).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bussing (6,062,018) as applied above, and further in view of either the Cooper et al paper of the IDS or the Russian 2034996C abstract and optionally further in view of Titus et al (5,847,353). Bussing '018 teaches various aspects of the claimed invention but do not specifically teach pyrolyzing the fuel to precondition the fuel. Cooper et al teach pyrolyzing the fuel via pyrolyzing the fuel in reactor using a heat source and a catalyst to enhance detonatability of the fuel. Russian 2034996C teach it is old and well known to pyrolyze a fuel as well as detonate a primary fuel in a pulse detonation engine. It would have been obvious to one of ordinary skill in the art to pyrolyze the fuel as taught by either Cooper et al or the Russian reference, in order to enhance the detonability of the

fuel. As for the use of a plasma source to pyrolyze the fuel, Titus et al teach a plasma fuel pyrolyzer 634 (see face of patent) for pyrolyzing a fuel 636 where the pyrolyzed fuel can be delivered to a combustor and turbine system (see Fig. 1). It would have been obvious to one of ordinary skill in the art to pyrolyze the fuel using a plasma source, as a well known type of fuel treatment used for fuels that are used in turbine engine systems.

7. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bussing (6,062,018) as applied above, and further in view of the Ma et al paper and Maslin et al (4,287,377) and optionally further in view of Titus et al (5,847,353). Bussing teaches various aspects of the claimed invention but do not teach pyrolyzing the fuel to precondition the fuel. Ma et al teach that prior to detonation, it is known the fuel is pyrolyzed (see page 161, left col., 1st paragraph). Maslin et al teach it is old and well known to pyrolyze the fuel (methane) in a reactor via a heat source and/or catalytically (col. 1, lines 4+) prior to combustion in a turbine engine. It would have been obvious to one of ordinary skill in the art to employ a pyrolyzer to pyrolyze the fuel, as such as the pyrolyzed constituents will be those that actually detonate. As for the use of a plasma source to pyrolyze the fuel, Titus et al teach a plasma fuel pyrolyzer 634 (see face of patent) for pyrolyzing a fuel 636 where the pyrolyzed fuel can be delivered to a combustor and turbine system (see Fig. 1). It would have been obvious to one of ordinary skill in the art to pyrolyze the fuel using a plasma source, as a well known type of fuel treatment used for fuels that are used in turbine engine systems.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax numbers for the organization where this application is assigned are 571-273-8300 for Regular faxes and 571-273-8300 for After Final faxes.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Thorpe, can be reached at 571-272-4444.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist of Technology Center 3700, whose telephone number is 703-308-0861. General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at http://www.uspto.gov/main/patents.htm

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